

To: Foster, Althea[Foster.Althea@epa.gov]
Cc: Restivo, Angela[Restivo.Angela@epa.gov]
From: Kirkland, Robert
Sent: Fri 8/7/2015 11:53:08 AM
Subject: RE: Travel Times

Althea,

I started with the gage in the middle of Durango. The start time is likewise based from there, because the only relative point I have is the plume will be in Durango by 3pm Thursday.

Robert Kirkland

Physical Scientist (Environmental)

Surface Water Center Coordinator

USEPA Region 6, 6WQ-NI

kirkland.robert@epa.gov

214-665-6798

"Here be dragons" Unknown author. A phrase used to fill the whitespace on early maps.

From: Foster, Althea
Sent: Thursday, August 06, 2015 11:01 PM
To: Kirkland, Robert
Cc: Restivo, Angela
Subject: FW: Travel Times

Bob,

On your map showing the plume travel times, from what starting point is the distance measured?
Thanks.

From: Restivo, Angela
Sent: Thursday, August 06, 2015 6:18 PM
To: Webster, Susan; Foster, Althea
Subject: FW: Travel Times

From: Kirkland, Robert
Sent: Thursday, August 06, 2015 6:13 PM
To: Crossland, Ronnie; Garcia, David; Kosfischer, Angel; Taylor, Patricia-A; Brown, Jamesr;
Restivo, Angela; McCasland, Mark
Subject: Travel Times

The travel times for the Spill are estimated using 4 mph in Green. The calculated travel times I used are twice the 4 mph estimate (slower than the 4 mph estimate).

Robert Kirkland

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Surface Water Center Coordinator

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From: Kirkland, Robert
Sent: Thursday, August 06, 2015 5:01 PM
To: Crossland, Ronnie; Garcia, David; Kosfiszer, Angel; Taylor, Patricia-A; Brown, Jamesr; Restivo, Angela; McCasland, Mark
Cc: Kosfiszer, Angel
Subject: Map of Intakes and Stream Gages

Here is the map of the intakes and gages on the Animas and San Juan. I will work up some travel times before I leave today, but NM or USGS may already have some idea. There is an application called ICWATERS co-developed by the EPA which should give a good estimate of concentration and instream flow time, but I do not currently have access to the software. HQ might be able to help in getting this if it is needed.

I will start working from home tomorrow about 6:30 am. My Cell number is 214-773-1208. Also Angel Kosfiszer will be in the Office to assist with this as well if needed.

Thanks!

Robert Kirkland

Physical Scientist (Environmental)

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